

CLAIMS

1. A method for controlling the movement of a specific sample component in a fluid sample comprising:
- 5 (a) providing a constrained fluid pathway having an inlet;
- (b) introducing the fluid sample into the inlet of the constrained fluid pathway;
- (c) providing an electrode mounted at the inlet of the fluid pathway, the electrode being entirely external to the constrained fluid pathway;
- 10 (d) applying voltage to the electrode to create a voltage gradient within the constrained fluid pathway to promote electrophoretic migration of the sample component; and
- (e) adjusting the flow rate of the fluid approximately equal to and opposite to the electrophoretic migration;
- 15 wherein movement of the specific sample component ceases.
2. The method of claim 1 wherein the constrained fluid pathway is a channel.
3. The method of claim 1 wherein the constrained fluid pathway is a capillary tube.
4. The method of claim 1 wherein the constrained fluid pathway is less than 200 microns in diameter.
- 20 5. The method of claim 1 wherein the flow rate of the fluid sample is controlled by electroosmosis.
6. The method of claim 1 wherein the flow rate of the fluid sample is controlled by pressure.

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7. The method of claim 1 wherein the constrained fluid pathway is a channel on a microchip.
8. An electrophoretic apparatus for controlling the movement of an sample component in a fluid sample comprising:
- 5 (a) at least one constrained fluid pathway having an inlet and an electrode mounted at the inlet of the constrained fluid pathway and entirely external to the constrained fluid pathway; and
- (b) a power supply for supplying a voltage to the electrode.
- 10 9. The apparatus of claim 8 wherein the constrained fluid pathway is a channel located on a microchip.
10. The apparatus of claim 8 wherein the constrained fluid pathway is a capillary.
11. The apparatus of claim 8 further comprising a buffer reservoir for containing a buffer solution in fluid contact with the constrained fluid pathway.
- 15 12. The apparatus of claim 8 wherein the constrained fluid pathway is a channel in a microchip.
13. The apparatus of claim 8 wherein the constrained fluid pathway is a capillary.
14. The apparatus of claim 8 wherein the diameter of the constrained fluid pathway is less than 200 microns in diameter.
- 20 15. An electrophoretic apparatus for controlling the movement of an sample component in a fluid sample comprising:
- (a) at least one injection fluid pathway having an electrode mounted at the inlet of said the pathway;

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- (b) at least one separation or further fluid transfer fluid pathway having an electrode mounted at the inlet of said pathway;
- (c) at least one power supply for providing voltage to the electrodes; and
- 5 (d) means for regulating the bulk flow within the channels.
16. The method of claim 15 wherein the constrained fluid pathway is a channel in a microchip.
17. The method of claim 15 wherein the constrained fluid pathway is a capillary.

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